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ABSTRACT

Arguing that software evaluation is crucial to the quality of courseware available in a school, this paper begins by discussing reasons why microcomputers are making such a tremendous impact on education, and notes that, although the quality of software has improved over the years, the challenge for teachers to integrate computing into the classroom is still substantial. General features that must be considered in evaluating software--which can range from simple drill and practice exercises to packages that encourage learner creativity--are identified as creativity, instructional objectives, content, screen formatting, instructions, student response, program response to the student, motivational devices, technical quality, documentation, and teacher utility. Software evaluation instruments that can serve as models are cited, including evaluation forms from the National Council of Teachers of Mathematics and from the San Mateo County (California) Office of Education, and such guides as the "Evaluation of Educational Software: A Guide to Guides." Three software reviewing sources are also cited--"The Educational Software Selector," "The Yellow Book of Computer Products for Educators," and "The Survey of Early Childhood Software." The paper concludes by suggesting a seven-step process for performing thorough evaluations of instructional software. Five references are provided. (DJR)

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Software Evaluation

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A Guide to Software Evaluation
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A Guide to Software Evaluation

The impact of the microcomputer on education paralleled its impact on society. Seymour Papert at the 1977 Congressional Hearings made the following prediction:

During the nineteen eighties, small but immensely powerful personal computers will become as much a part of everyone's life as the TV, the telephone, the printed paper, and the notebook. Indeed, computers will integrate and supersede the functions of these and other communicational and recreational home technologies. (Papert, 1977)

This prediction has proven true and computers have become a deeply entrenched component of society. Conservative employment projections indicate that within 15 years, over 80 percent of the workforce will be involved in the information industry (Agee, 1985).

Christine Doerr (1979) cites reasons why microcomputers are making such a tremendous impact on education:

(1) Opportunities for relevant education - a goal educators have been struggling with for decades and having mixed success; (2) Most jobs of the future will involve computer technology in one way or another and the vocational aspect of computer education cannot be overlooked; (3) Rather than supplanting the teacher's efforts, the computer can create a

powerful new teaching force surpassing anything yet achieved in education; (4) Virtually instantaneous feedback continues to be a distinct advantage; and (5) Now students can have creative daily individualized instructional programs that educators have espoused for years.

When first investigating computers, many professionals concentrate on hardware and overlook the fact that over time their major investment will be software. Without at least a modest library of software the computers are next to useless in most environments. At the present time, the pace of changes in software seems to be leveling off. However, the body of software materials continues to grow rapidly as educational publishers produce courseware to accompany their textbooks and other curriculum materials. During the 1985-86 school year over 1148 new educational software products were released which was 282 more than the year before (Solomon, 1986).

Generally the quality of software has improved over the years, particularly in speed and reliability of operation, documentation, and quality of enhancements. However the challenge for teachers to integrate computing into the classroom is still substantial. A knowledge of software is a necessity at every level of the educational establishment.

Criteria to Consider in Software

How do you select good software out of the hundreds of computer programs now available? Software can range from simple drill and practice programs to more sophisticated packages that encourage the learner to use creative mental skills. It is a substantial task to select the best ones for each particular need unless there are guidelines to follow. These general features seem to characterize good software:

1. Creativity - The software presents the material in unusual ways and involves the student in experiences not otherwise available.
2. Instructional objectives - The software includes clearly defined instructional objectives and suggested activities for using the package to achieve them.
3. Content - Review factual content of the software for accuracy. Also, check the instructional content of the program for relevance to the curriculum and to determine whether it is appropriate at the grade level(s) for which it is being considered.

4. Screen formatting - The screens should have one page of information at a time. Students should be able to control the screen by advancing or returning to any desired page at will.
5. Instructions - Does the program really work the way the instructions indicate it will?
6. Student response - Well designed courseware is "user friendly", making it easier for the student to work through the program.
7. Program response to the student - There should be positive rewards to correct responses; non-judgmental responses to errors.
8. Motivational devices - Do not assume that programs are automatically improved by the addition of color, graphics, etc. unless they have instructional value and aid the flow of the program.
9. Technical quality - A program should be technically sound, free of programming errors, and easy to operate in normal use over a long period of time. Courseware that does not operate correctly should be returned to the producer with a letter outlining the problem.

10. Documentation - Is all documentation accompanying this software clear and thorough?
11. Teacher utility - The program should be easy to use in the classroom and operate with a minimum of teacher intervention. It should have a good classroom management system that saves the teacher time and effort.

Awareness of Prominent Models of Evaluation Instruments

Many models of evaluation instruments are available. Checklists and forms for software evaluation have been developed by the National Council of Teachers of Mathematics, San Mateo County Office of Education, and Scholastic among others. In January 1983, Jones and Vaughan published their book, Evaluation of Educational Software: A Guide to Guides, which compiled a selection of the software review and evaluation forms then available. None of these forms is entirely satisfactory in all situations. It seems to be more feasible for each school district to develop an evaluation form to suit its own particular needs.

Print and Organizational Resources

There are innumerable computing journals on the market that both advertise and give software reviews. Also various companies produce current catalogs of software they offer for sale. Three good reviewing sources are:

1. The Educational Software Selector
EPIE Institute
P.O. Box 839
Water Mill, NY 11976
2. The Yellow Book of Computer Products for Education
NEA Educational Computer Service
P.O. Box 70267
Washington, DC 20088
3. The Survey of Early Childhood Software
(Includes evaluation of 108 programs for children in
preschool and kindergarten)
High Scope Educational Research Foundation
600 N. River St.
Ypsilante, MI 48197

Evaluation Process

After locating a piece of software to preview, the next step is a thorough evaluation of the software. There are definite steps to performing an evaluation of software:

1. Locate a program to review and obtain a preview copy.
2. Read the documentation carefully to see if it states instructional objectives, suggests classroom uses and related activities, and provides all needed instructions.
3. Run the program to get a good feel before use in the classroom.
4. Complete evaluation form.
5. Try the program with students and get their reaction.
6. Pay close attention to whether this courseware represents a valid and creative use of the computer.
7. After the decision to purchase or not to purchase has been made, offer a critical review to the publisher. Refusal to purchase anything other than excellent programs will help to improve the courseware available.

In summary, software evaluation is crucial to the quality of courseware available in a school. The procedures contained in this paper are useful as a guide for evaluating software and should not be considered as infallible rules for all situations. It is hoped that thoughtful use of the ideas in this paper can contribute to a more well-rounded curriculum in the school.

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